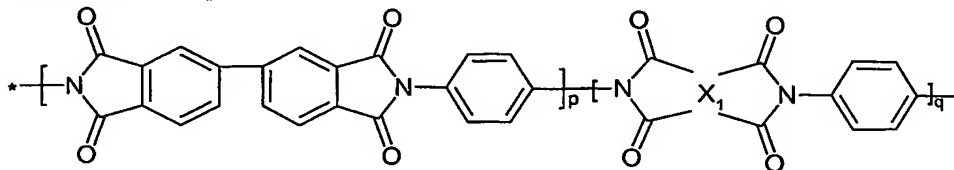


## What Is Claimed Is:

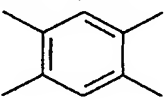
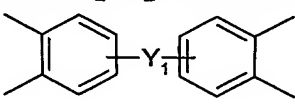
1. A double-sided metallic laminate comprising a metallic layer at one side, a resin layer of a low expansion polyimide having a thermal expansion coefficient of  $5 \times 10^{-6}$  to  $2.5 \times 10^{-5}/^{\circ}\text{C}$ , a resin layer of a thermoplastic polyimide and a metallic layer at the other side.

2. The double-sided metallic laminate according to claim 1, wherein the low thermal expansion polyimide is the following formula 1.

[formula 1]



in which,  $p > 1$ ,  $q > 0$  and  $p/q = 0.4 \sim 2.5$ ,

15  $X_1$  is  or , and

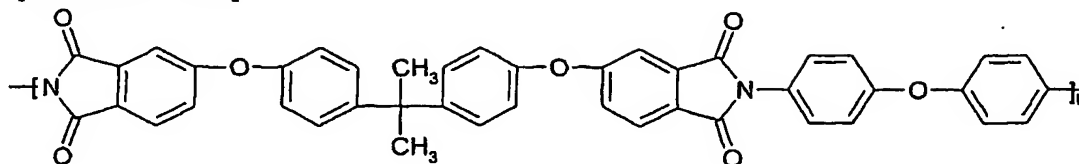
$Y_1$  is  $-\text{O}-$  or  $-\text{CO}-$ .

3. The double-sided metallic laminate according to claim 1, wherein the thermoplastic polyimide has a glass transition temperature of 200 to  $250^{\circ}\text{C}$ .

4. The double-sided metallic laminate according to claim 1, wherein the thermoplastic polyimide is a copolymer

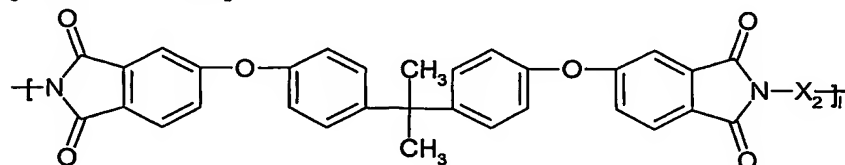
including the following formula 2a, formula 2b, formula 2c and formula 2d.

[formula 2a]

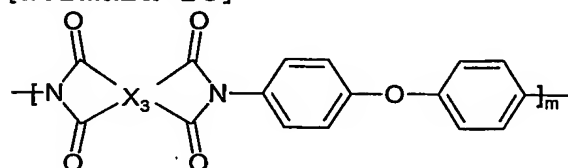


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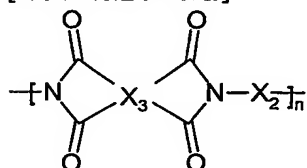
[formula 2b]



[formula 2c]



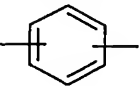
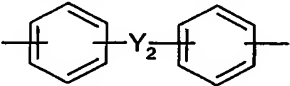

[formula 2d]

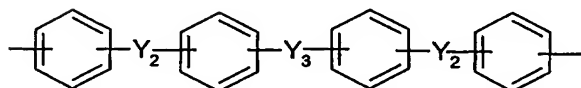


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in which,  $k \geq 1$ ,  $l$ ,  $m$ ,  $n \geq 0$ ,  $l = m = n \neq 0$ ,  $k \geq l$ ,  
 $k + l > 1.5(m + n)$  and  $k + m > 1.5(l + n)$ ,

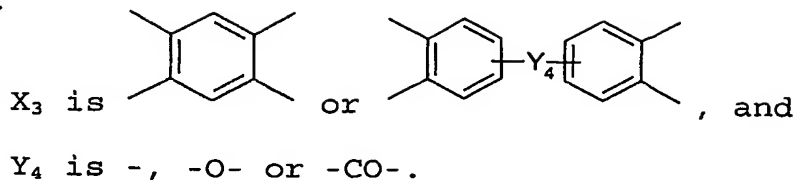
$X_2$  is at least one selected from the group consisting

of , ,  and

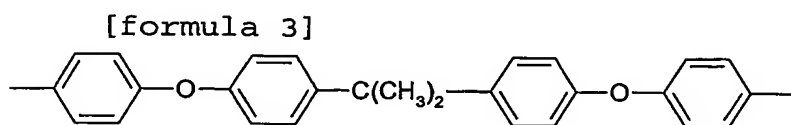


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$Y_2$  and  $Y_3$  are each independently or simultaneously -,  
 -O-, -CO-, -S-, -SO<sub>2</sub>-, -C(CH<sub>3</sub>)<sub>2</sub>- or -CONH-,

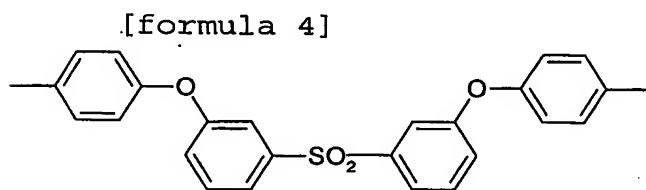


5. The double-sided metallic laminate according to claim 4, wherein the thermoplastic polyimide is the formulae 2a to 2d, in which  $m, n = 0$  and  $X_2$  is the following formula 3.



10

6. The double-sided metallic laminate according to claim 4, wherein the thermoplastic polyimide is the formulae 2a to 2d, in which  $m, n = 0$  and  $X_2$  is the following formula 4.



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7. The double-sided metallic laminate according to claim 1, wherein the metallic layer is formed of copper.

20

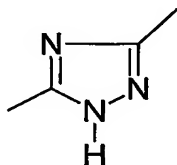
8. The double-sided metallic laminate according to claim 1, which further comprises a resin layer of a polyimide between the metallic layer at one side and a

resin layer of a low expansion polyimide for improving adhesion with a metal.

9. The double-sided metallic laminate according to  
5 claim 8, wherein the polyimide for improving adhesion with a metal is a polyimide having a -NH- functional group introduced.

10. The double-sided metallic laminate according to  
10 claim 8, wherein the polyimide for improving adhesion with a metal is a polyimide having the following formula 5 introduced.

[formula 5]



15

11. The double-sided metallic laminate according to claim 1, wherein the polyimide for improving adhesion with a metal is a copolymer including the formula 2a, formula 2b, formula 2c and formula 2d.

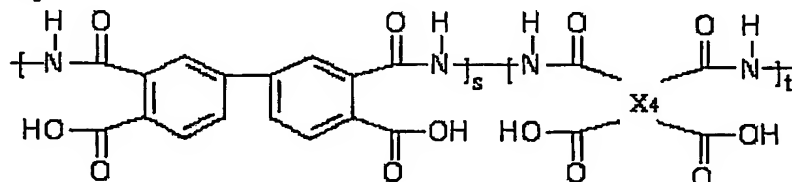
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12. A method for manufacturing a double-sided metallic laminate comprising simultaneously or sequentially applying a precursor of a low thermal expansion polyimide

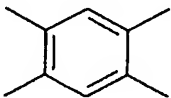
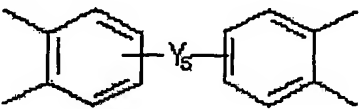
having a thermal expansion coefficient of  $5 \times 10^{-6}$  to  $2.5 \times 10^{-5}/^{\circ}\text{C}$  and a precursor of a thermoplastic polyimide on a metal foil to form one side of the double-sided metallic layer, followed by drying and curing, and laminating another metal foil on the resin layer of a thermoplastic polyimide of the resulting one-sided metallic laminate comprising a metal foil layer, a resin layer of a low expansion polyimide and a resin layer of a thermoplastic polyimide, which are sequentially laminated, to form the other side of the double-sided metallic laminate.

13. The method according to claim 12, wherein the precursor of a low thermal expansion polyimide is a copolymer of the following formula 6.

15 [formula 6]



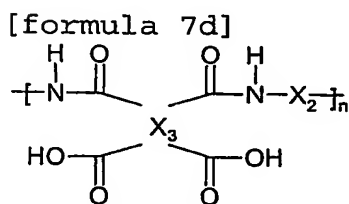
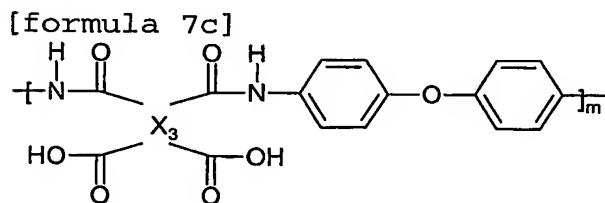
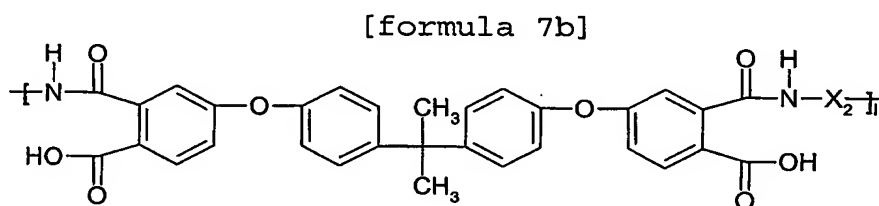
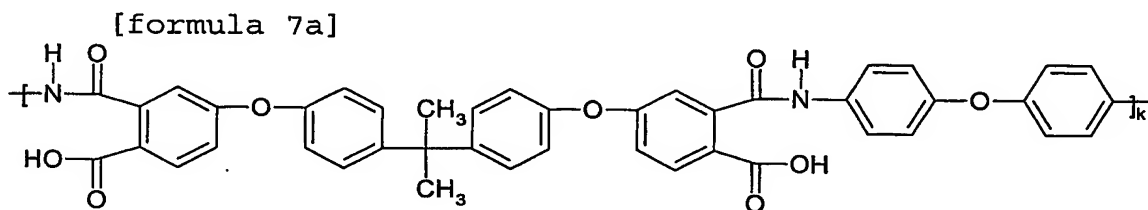
in which,  $s > 1$ ,  $t > 0$  and  $s/t = 0.4 \sim 2.5$ ,

$X_4$  is  or , and

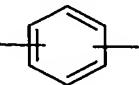
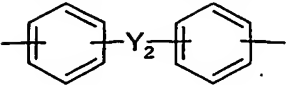
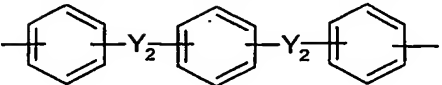
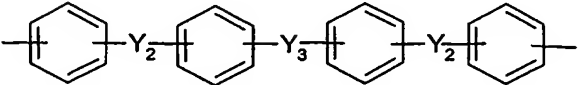
$Y_5$  is -, -O- or -CO-.

14. The method according to claim 12, wherein the thermoplastic polyimide has a glass transition temperature of 200 to 250°C.

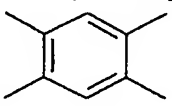
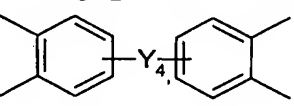
15. The method according to claim 12, wherein the precursor of a thermoplastic polyimide is a copolymer including the following formula 7a, formula 7b, formula 7c and formula 7d.



in which,  $k \geq 1$ ,  $l$ ,  $m$ ,  $n \geq 0$ ,  $l = m = n \neq 0$ ,  $k \geq l$ ,  
 $k + l > 1.5(m + n)$  and  $k + m > 1.5(l + n)$ ,

$X_2$  is at least one selected from the group consisting  
 of , ,  and  


$Y_2$  and  $Y_3$  are each independently or simultaneously -,  
 5 -O-, -CO-, -S-, -SO<sub>2</sub>-, -C(CH<sub>3</sub>)<sub>2</sub>- or -CONH-,

$X_3$  is  or , and

$Y_4$  is -, -O- or -CO-.

16. The method according to claim 15, wherein the  
 10 precursor of a thermoplastic polyimide is the formulae 7a to 7d, in which m, n=0 and  $X_2$  is the formula 3.

17. The method according to claim 15, wherein the  
 precursor of a thermoplastic polyimide may be the formulae  
 15 7a to 7d, in which m, n=0 and  $X_2$  is the formula 4.

18. The method according to claim 12, wherein the  
 precursor applied on the metal film at one side of the  
 double-sided metallic layer is a precursor of a polyimide  
 20 for improving adhesion with a metal, precursor of a low  
 thermal expansion polyimide having a thermal expansion  
 coefficient of  $5 \times 10^{-6}$  to  $2.5 \times 10^{-5}/^\circ\text{C}$  and a precursor of a  
 thermoplastic polyimide.

19. The method according to claim 12, wherein the precursor of a polyimide for improving adhesion with a metal is a precursor of a polyimide having a -NH-  
5 functional group introduced.

20. The method according to claim 12, wherein the precursor of a polyimide for improving adhesion with a metal is a precursor of a polyimide having the formula 5  
10 introduced.

21. The method according to claim 12, wherein the precursor of a polyimide for improving adhesion with a metal is a copolymer including formula 7a, formula 7b,  
15 formula 7c and formula 7d.